

U.S.S.N. 10,656,585

Claim Amendments

Please amend claims 1, 2, 4, and 6 as follows:

Please cancel claims 3, 7, 8, and 9-20 as follows:

Please add new claims 21-34 as follows:

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Claims as Amended

1. (currently amended) A built-in pre-conditioning apparatus for pre-conditioning a polishing substrate to achieve a desired operating temperature, comprising:

a pre-conditioning arm pivotally mounted adjacent a substrate, said substrate for polishing a semiconductor production wafer surface comprising a first material; and

an ingot comprising the first material, said ingot removeably carried by said pre-conditioning arm for engaging and pre-conditioning the substrate; and,

an actuation mechanism operably engaging said pre-conditioning arm for selectively moving said ingot into and out of contact with the substrate at a selected contact pressure.

2. (currently amended) The apparatus of claim 1 wherein said ingot comprises consists essentially of a material selected from

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the group consisting of copper, silicon dioxide and tantalum.

3. cancelled.

4. (currently amended) The apparatus of claim 1 ~~[[3]]~~ ~~[[a]]~~ wherein said ingot consists essentially of the first material, said first material selected from the group consisting of copper, silicon dioxide and tantalum.

5. (original) The apparatus of claim 1 wherein said pre-conditioning arm comprises a support and an ingot mount head carried by said support, and wherein said ingot is carried by said ingot mount head.

6. (currently amended) The apparatus of claim 5 wherein said ingot comprises consists essentially of a material selected from the group consisting of copper, silicon dioxide and tantalum.

7. cancelled.

8. cancelled.

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Claims 9-20 cancelled

21. (new) The apparatus of claim 1, wherein the selected contact pressure is from about 4 to about 5 psi.

22. (new) The apparatus of claim 1 wherein said ingot has a thickness of from about 1 to about 10 cm.

23. (new) The apparatus of claim 1 wherein the substrate is a polishing pad.

24. (new) The apparatus of claim 1 wherein the ingot is fixedly mounted on the pre-conditioning arm, said preconditioning arm pivotable for sweeping said ingot across the substrate surface.

25. (new) The apparatus of claim 1 further comprising a conditioning arm comprising a conditioning head, said conditioning arm pivotally mounted adjacent the substrate for conditioning the substrate.

26. (new) A pre-conditioning apparatus for pre-conditioning a polishing pad to achieve a desired polishing pad temperature for a semiconductor wafer polishing operation, comprising:

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a pre-conditioning arm mounted adjacent a polishing pad;

an ingot consisting essentially of a first material, said ingot removeably mounted on said pre-conditioning arm for engaging and pre-conditioning the polishing pad, said pre-conditioning arm pivotable for sweeping said ingot across said polishing pad; and,

an actuation mechanism operably engaging said pre-conditioning arm for selectively moving said ingot into and out of contact with the substrate at a selected contact pressure.

27. (new) The apparatus of claim 26, wherein the ingot has a thickness of from about 1 to about 10 cm.

28. (new) The apparatus of claim 26, wherein the selected contact pressure is from about 4 to about 5 psi.

29. (new) The apparatus of claim 26 wherein said first material is selected from the group consisting of copper, silicon dioxide and tantalum.

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30. (new) The apparatus of claim 26 further comprising a conditioning arm comprising a conditioning head, said conditioning arm pivotally mounted adjacent the polishing pad for conditioning the polishing pad.

31. (new) A polishing apparatus for condition and pre-conditioning a polishing pad to achieve a desired polishing pad temperature for a semiconductor wafer polishing operation, comprising:

a conditioning arm comprising a conditioning head, said conditioning arm pivotally mounted adjacent the polishing pad for conditioning the polishing pad.

a pre-conditioning arm mounted adjacent the polishing pad; and,

an ingot consisting essentially of a first material, said ingot removeably and fixedly mounted on said pre-conditioning arm for engaging and pre-conditioning the polishing pad, said pre-conditioning arm pivotable for sweeping said ingot across said polishing pad, said ingot for raising a temperature of said polishing pad to a desired

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operating temperature within a desired time period for polishing a semiconductor production wafer surface comprising said first material;

wherein an actuation mechanism operably engages said pre-conditioning arm for selectively moving said ingot into and out of contact with the polishing pad at a selected contact pressure.

32. (new) The apparatus of claim 31, wherein the selected pressure is about 4 to about 5 psi.

33. (new) The apparatus of claim 31, wherein said ingot has a thickness of about 1 to about 10 cm.

34. (new) The apparatus of claim 31, wherein said ingot has diameter of about 6 to about 8 inches.